

Claims:

1. A blood separation kit comprising:

5 (a) - an elongated hollow container having a first end and a second end and comprising a first port mounted at said first end for admitting liquid to or expelling liquid from said container, said port being closed unless opened by a fitting attached to said port;

10 (b) a plunger movably disposed within and engaging the walls of said container of (a), said plunger comprising

(1) a passageway through said plunger communicating with the interior of said container of (a), and

15 (2) a second port for expelling liquid mounted within said passageway of (b)(1), said port being closed unless opened by a fitting attached to said port; and

(c) a plunger rod having a passageway therein and adapted to engage said plunger of (b), said plunger rod comprising

20 (1) means for engaging said plunger to provide communication with the inside of the container of (a) via the passageway in the plunger of (b) to the passageway in said plunger rod,

25 (2) a third port for expelling liquid mounted at the end of said plunger rod opposite said means for engaging said plunger, said third port being closed unless opened by a fitting attached to said third port.

2. A blood separation kit of Claim 1, further comprising:

30 (d) a needle set comprising:

(1) a hollow needle for taking a sample of a patient's blood;

35 (2) a hollow tube attached to and communicating with said needle for transferring said patient's blood to the container of (a); and

(3) a fitting adapted to engage the first port of (a) and to open said first port.

3. A blood separation kit of Claim 1, further comprising:

5 (e) a waste bag having a hollow tube connected to and communicating with the interior of said bag for receiving separated blood fractions;

(f) a fitting adapted to engage the first and third ports (a) and (c) (2) respectively and to open said first and third ports; and

10 (g) a clamp mounted on the tube of (e) for opening and closing the hollow tube of (e).

4. A method of collecting and separating a patient's blood and recovering a platelet-rich concentrate comprising:

15 (a) collecting the patient's blood using a needle set comprising a hollow needle having attached tubing and a fitting adapted to engage a first port in an elongated container fitted with a movable plunger having a second port therein;

20 (b) transferring said blood through said first port into said elongated container;

(c) centrifuging said blood in said container and separating said blood into platelet-rich plasma and red blood cells;

25 (d) displacing the red blood cells separated in (c) from said container by moving said plunger towards said first port and expelling said red blood cells into a waste bag through tubing attached to said first port;

30 (e) removing said waste bag of (d) centrifuging said platelet-rich plasma remaining in said container and separating a platelet-rich concentrate from a platelet-poor plasma;

35 (f) attaching a hollow plunger rod having a third port therein to said plunger and displacing the platelet-poor plasma separated in (e) from said container by moving said plunger towards said first port and expelling said

platelet-poor plasma through said second port of said plunger and said third port of said plunger rod into a waste bag attached to the plunger rod; and

(g) recovering the platelet-rich concentrate separated in (e) and remaining in said container.

5 5. A method of collecting and separating a patient's blood and recovering a platelet-rich concentrate comprising:

10 (a) collecting the patient's blood using a needle set comprising a hollow needle having attached tubing and a fitting adapted to engage a first port in an elongated container fitted with a movable plunger having a second port therein;

15 (b) transferring said blood through said first port into said elongated container;

(c) centrifuging said blood in said container and separating said blood into platelet-poor plasma, red blood cells, and platelet-rich concentrate;

20 (d) displacing the red blood cells separated in (c) from said container by moving said plunger towards said first port and expelling said red blood cells into a waste bag through tubing attached to said first port;

25 (e) removing said waste bag of (d) and attaching a hollow plunger rod having a third port therein to said plunger and displacing the platelet-poor plasma separated in (c) from said container by moving said plunger toward said first port and expelling said platelet-poor plasma through said second port of said plunger and said third port of said plunger rod into a waste bag attached to the plunger rod;

30 and

(f) recovering the platelet-rich concentrate separated in (c) and remaining in said container.

35 6. A blood separation kit of claim 1, wherein said first, second, and third ports comprise valves positioned to

to prevent expelling blood fractions during centrifugation of blood in said container.

5 7. A blood separation kit of claim 1, wherein said
ports comprise Luer fittings.